INNOVATION DIC PROJECT

CONTENTO TRADE SRL

Technological innovation for the environment

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Transfer of the instantaneous controlled expansion technology DIC to food farming and pharmaceutical industries of desiccation, extraction and sterilization

BRIEF DESCRIPTION:

Partners:

Contento Trade srl, Campoformido, Italy
Gradient laboratoire maitrise del technologies agroindustrielles LMTAI, Compiegne, France
Centro Tecnologico Nacional de la Conserva (CTC), Molina De Segura, Spain
Divergent S.A., Compiegne, France
Gallina Blanca, Barcellona, Spain Grainnergie S.A., La Rochelle, France
Neu Sechage Industriel S.A. (NEU), Marq en Barouel, France
Zini prodotti alimentari srl, Cesano Boscone, Italy

Objectives:

The project aims to transfer DIC technology to the industrial sectors, from which they could profit; in addition, particular care is given to the activities supported by partner trades of this project.

It includes:

The realization of a semi-industrial pilot plant and different phases which concern DIC use. It could represent a technological improvement. DIC associates a high quality to competitive prizes; so impossible treatments could be realized. In addition, the environmental impact is reduced compared to traditional methods.

OBJECTIVES:

The objective of the project is to plan and realize the transfer of the DIC technology to the industrial sectors that can mainly benefit from it; even if the impact of this technology invests many sectors, a particular importance has been assigned to the activities developed by the companies involved in this project. The transfer of the DIC technology will be carried out thanks to the realization of a pilot plant of semi-industrial dimensions. The operative phases are the following:

- ✓ Designing, manufacturing and set up of the DIC pilot plant, with particular care to the security norms;
- ✓ Preliminary trials of the treatments to be executed with DIC on some chosen products, to fix the best procedures to improve the final quality of

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the products. The products to be tested are: legumes, pasta, shoots, chalk and clay;

- ✓ Training of qualified technicians, able to use properly the plant; this will be obtained thanks to three cycle of training of one week each;
- ✓ Spreading of DIC technology, this is the main aim of the project and imply the research of possible industrial users of the plant though the use of DIC to obtain some demonstrative products of industrial interest;
- ✓ Promotion of the obtained results with demonstrative products by the potential users.

STATE OF THE ART

Most part of industrial processes has common needs: optimization of the product quality and reduction of the production costs, linked to the minimization of environmental impact. In general, the processes that guarantee a high quality are at the same time very expensive and so they are inapplicable at industrial scale. This is the case, for example, of the desiccation by freeze drying, sterilization y UHT, extraction by supercritical CO2, etc. The industrial processes that could benefit from DIC are the following:

- ✓ food desiccation: the techniques actually used are the hot air desiccation, atomization, freeze drying; in France alone in 1992 more than 100.000 tons of dried fruit, cereals for appetizers were produced, with a turnover of more than 800 million Euro.
- ✓ desiccation of pharmaceutics and cosmetics: it's mainly obtained thanks to freeze drying and is systematically employed for powders, tablets, etc.
- ✓ sterilization: is obtained by Appert's method, pasteurization, ionizing radiation, freezing, UV radiation, chlorination, ozonisation, sterilization Appet's method alone has a turnover of 3 billion euro in France.
- ✓ texturising: the adopted methods employ over-drying and puffing; in France more than half of the annual rice production (137000 tons) is texturised.
- ✓ extraction: is made with solvents, steam current and supercritical CO2. In the 1992 60245 tons of essential oils, valuable of 800 million Euro. The new European and American normative tend to boost natural extracts with respect to the ones obtained with chemicals.

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MAIN INNOVATIONS

Only DIC is actually able to couple high quality with competitive cost and realize treatments otherwise impossible. This technology guarantees at the same time hygienic requirements (aseptic treatment chamber) and environment preservation (absence of alimentary additives and chemical solvents) and the steam works simultaneously as solvent and pressure and heat propagator.

DIC is characterized by its versatility in several industrial sector. Thanks to DIC, it's possible to achieve a superior quality product with low costs and with environmental impact always inferior to classic technologies.

DIC allows desiccation, sterilization and extraction with supercritical CO2 with final quality comparable respectively to freeze drying, UHT sterilization, extraction with supercritical CO2, but with costs inferior than hot air desiccation, simple thermal treatment and steam current extraction. So, DIC technology represent a valuable and immediate technological improvement for the whole Europe.

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